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1.0 Introduction

1.1 Purpose

The purpose of this closure site assessment report is to describe findings and actions taken associated with the removal of two (2) Underground Storage Tanks (UST's) at the Harold's Lucky Dollar General Store facility located in Harrah, Washington. The limited investigation and independent remedial actions were performed to comply with regulatory requirements established by the Washington State Department of Ecology (WSDOE) and U. S. Environmental Protection Agency (USEPA).

1.2 Scope of Work

Joe Hall Construction (JHC) of Selah, WA provided UST decommissioning and removal services. Upon discovery of petroleum impacted soils, JHC provided excavation services for removal of impacted soils. Sage Earth Sciences, Inc. (Sage) provided field screening, UST closure site assessment and additional sampling services upon discovery of petroleum impacted soils. Soil samples were submitted to Friedman and Bruya, Inc. (FBI), Seattle, WA for independent laboratory analysis.

2.0 Background Information

2.1 Site Location

The facility is located at 4080 Harrah Road, Harrah, WA. It is situated within the NE 1/4 of the NE 1/4, Section 34, Township 11 North, Range 18 East, Willamette Meridian. The site latitude is approximately $46^{\circ} 24' 13''$ and the longitude is $120^{\circ} 32' 35''$. The location of the site is shown by Figure 1.

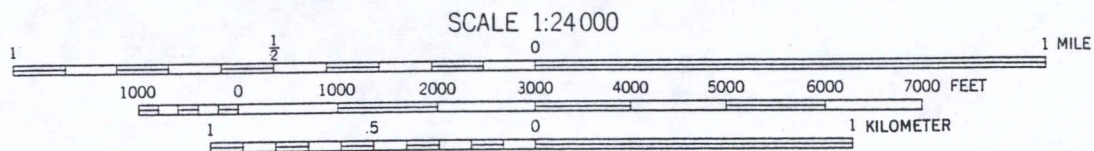
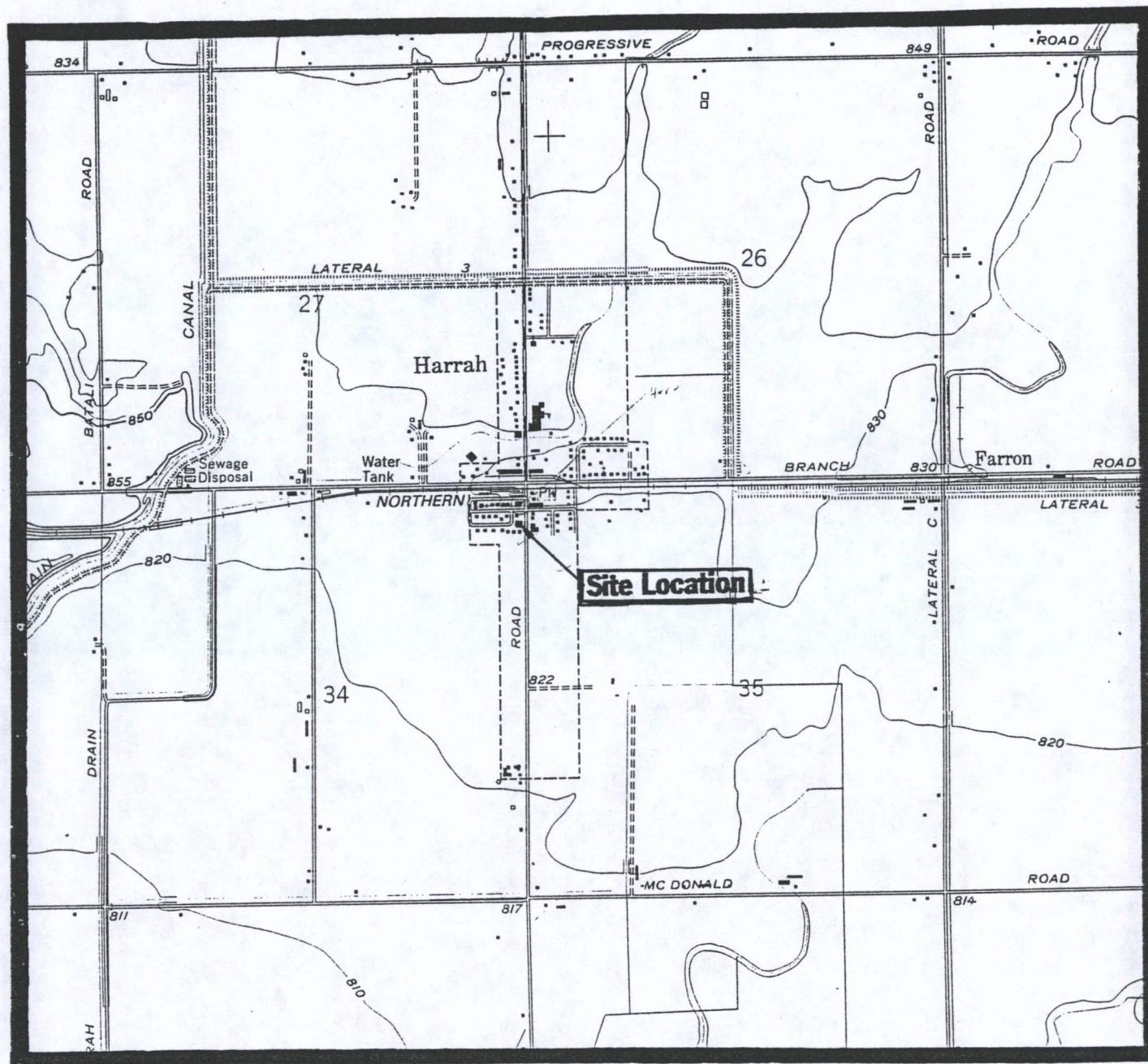
2.2 Site Description & Adjacent Land Use

The facility is owned and operated by:

Harold's Lucky Dollar General Store

4080 Harrah Road
Harrah, WA 98933
(509) 848-2282

The authorized site contact is Mr. Doug Deyo. The property is currently occupied by a grocery store. Harrah Road is located immediately east of the site as shown by Figure 2. The Harrah Cafe, Harrah Video and Harrah City Hall are located east of the site, across Harrah Road. West Pioneer Street lies immediately south of the site. The Harrah Fire Department lies across the intersection of Harrah Road and Pioneer Street, relative to the site. A laundromat, carwash and residential dwelling lies south of the site, across West Pioneer Street. Residential dwellings lie west of the site.

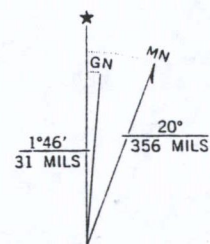


CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

FOR SALE BY U. S. GEOLOGICAL SURVEY



Figure 1. Site Location Map



UTM GRID AND 1985 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

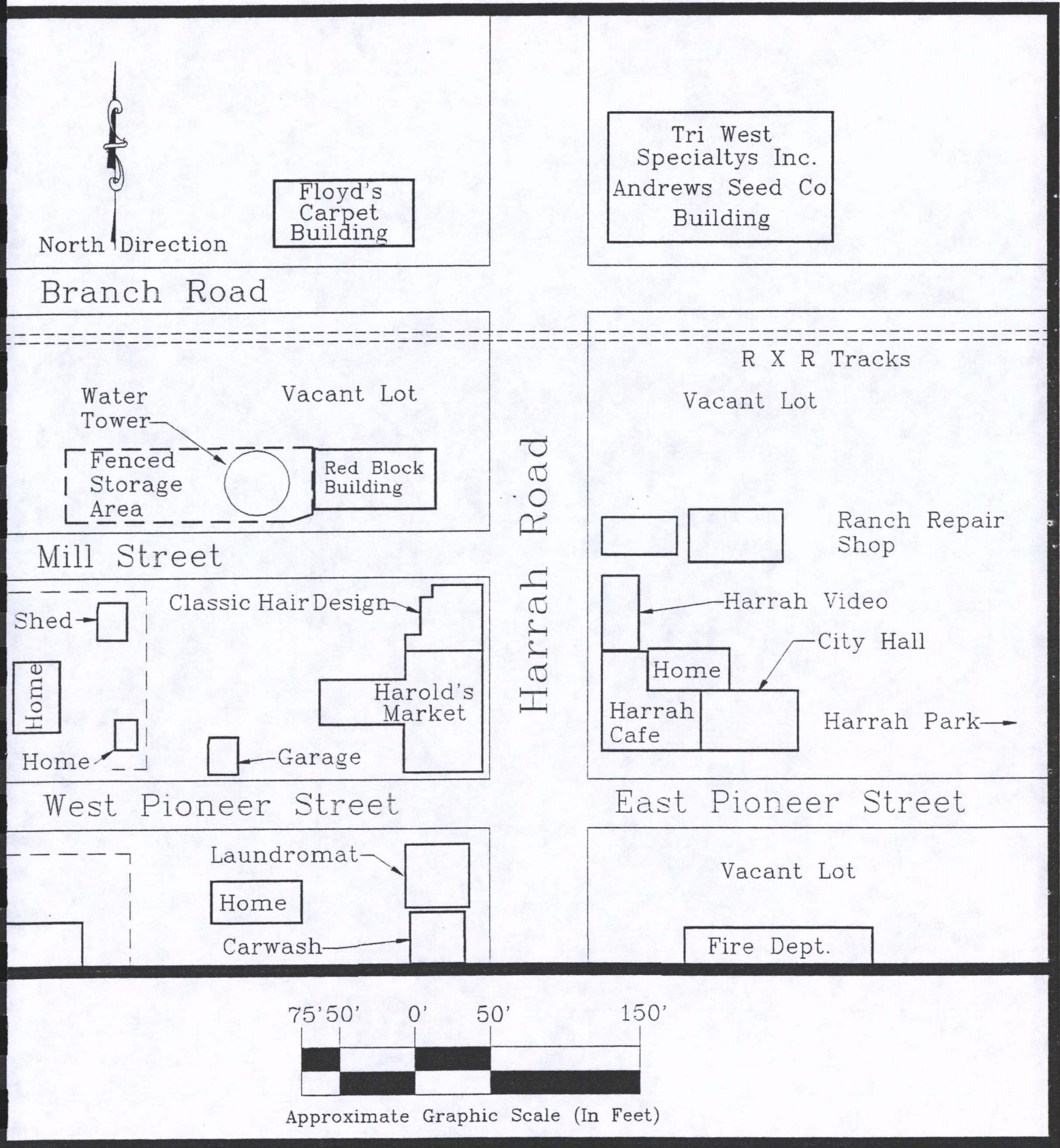


Figure 2. Site Vicinity Map

Mill Street lies immediately north of the site. A block building and water storage tower are located north of the site, across Mill Street.

The local topography slopes gently southwest. An irrigation lateral lies approximately one-half (1/2) mile north and east of the site. The Main Canal lies approximately three-fourths (3/4) of a mile west of the site. An irrigation drain lies approximately one-half (1/2) of a mile southeast of the site.

2.3 UST System Information

The U.S.E.P.A. Site Identification Number is 4-260037. Two UST's (Tank #1 and Tank #2) were positioned east of the grocery store building as shown by Figure 3. These UST's were used to support retail sale of petroleum products and consisted of:

- ♦ one (1) 2,000 gallon regular (leaded) gasoline tank (Tank #1) and
- ♦ one (1) 2,000 gallon unleaded gasoline tank (Tank #2).

Fuel lines extended from the UST's to a fuel pump located atop the UST's. The UST's were installed in 1982.

2.4 Soils Description

Soil observed within the final remedial excavations consisted of matrix supported, sparse cobbles and small boulders up to eight (8) inches in diameter. This unit extends beneath the asphalt pavement surface to a depth of approximately thirteen (13) feet Below Ground Surface (BGS). The matrix in this unit consists of sandy silt. This soil unit is classified as "GM" according to the *Unified Soil Classification System*. Soil descriptions are documented on the *Soil Excavation Profile* (Appendix A).

2.5 Hydrogeology

Groundwater was not encountered during excavation activities to depths of approximately thirteen (13) feet BGS at the site. Determination of site hydrogeologic conditions was not included in Sage's scope of work for this project.

3.0 Closure Site Assessment

Rodney L. Heit, an environmental assessor licensed by the International Fire Code Institute performed closure site assessment and additional soil sampling services throughout the duration of this project. Sage collected soil samples and performed field screening using a Flame Ionization Detector (FID). Soil sampling and field screening methods are described by Appendix B. Soil sample descriptions and field screening results are documented by the *Daily Field Sampling Log* (Appendix C). The analytical methods employed during this investigation are described by Appendix D.

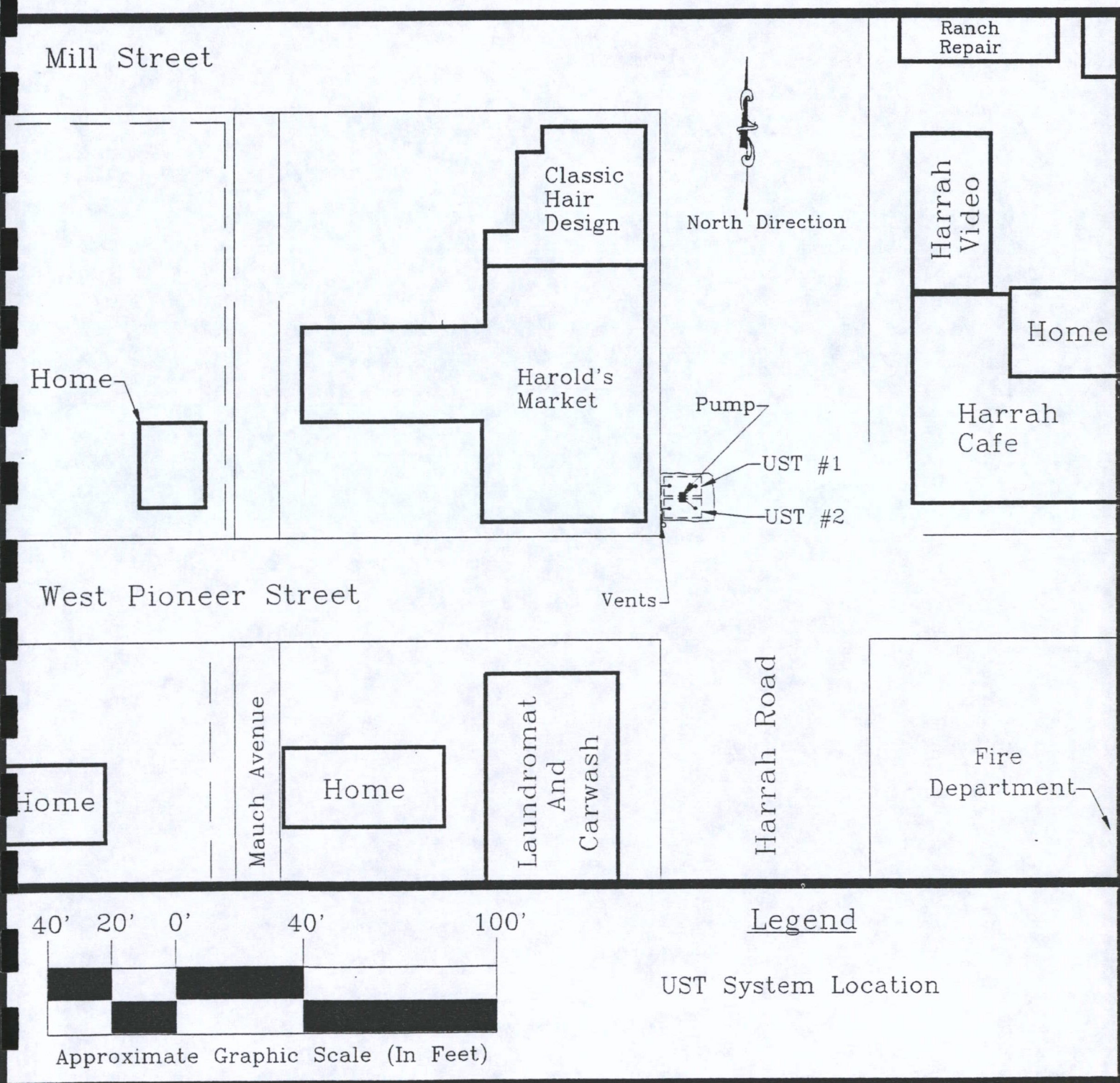


Figure 3. Site Map Showing UST System Locations

3.1 UST Excavation

JHC decommissioned and removed the two (2) UST's (Tank #1 and Tank #2) on November 11, 1998. JHC removed the fuel pump and fuel lines prior to Sage's arrival on site. Sage performed a visual inspection of the tanks and found them to be in good condition with moderate corrosion on the tank surface. No holes were observed in the UST's. Petroleum odors were observed at the floor of the UST basin. The soil generated during removal of this UST was placed upon, and covered by, a plastic liner for temporary storage at the site.

Sage collected six (6) soil samples (JHC-0498-S1 through JHC-0498-S6) from within the UST excavation at the locations shown by Figure 4. FBI analysis of these soil samples found:

- ♦ no detectable (less than 20 parts per million (ppm)) gasoline range petroleum hydrocarbons,
- ♦ no detectable (less than 50 ppm) diesel range petroleum hydrocarbons,
- ♦ no detectable (less than 100 ppm) heavy oil range petroleum hydrocarbons and
- ♦ total lead at concentrations ranging from less than 2 ppm up to 10 ppm.

Comparison of the analytical results (Appendix E) with the Method A Cleanup Levels (Cleanup Levels) of WAC 173-340-740 (Appendix F) indicates that no additional remedial action is required within the UST excavation.

4.0 Disposition of Project Generated Wastes

4.1 Soil Stockpile #1

Soil Stockpile #1 is composed of approximately forty (40) cubic yards of apparently non-impacted soil generated during removal of the UST's. Sage collected three (3) soil samples (JHC-0498-SP7 through JHC-0498-SP9) from this stockpile and submitted them to FBI for laboratory analysis. These sampling locations are shown by Figure 7. HCID analysis of these samples found:

- ♦ no detectable (less than 20 ppm) gasoline range petroleum hydrocarbons,
- ♦ detectable (greater than 50 ppm) diesel range petroleum hydrocarbons in only one (1) soil sample (JHC-0498-SP7) and
- ♦ no detectable (less than 100 ppm) heavy oil range petroleum hydrocarbons.

Additional analysis of the soil stockpile samples found:

- ♦ total lead at concentrations ranging from 4 ppm up to 8 ppm and
- ♦ diesel/heavy oil range petroleum hydrocarbons, in sample JHC-0498-SP7, at a concentration of 50 ppm.

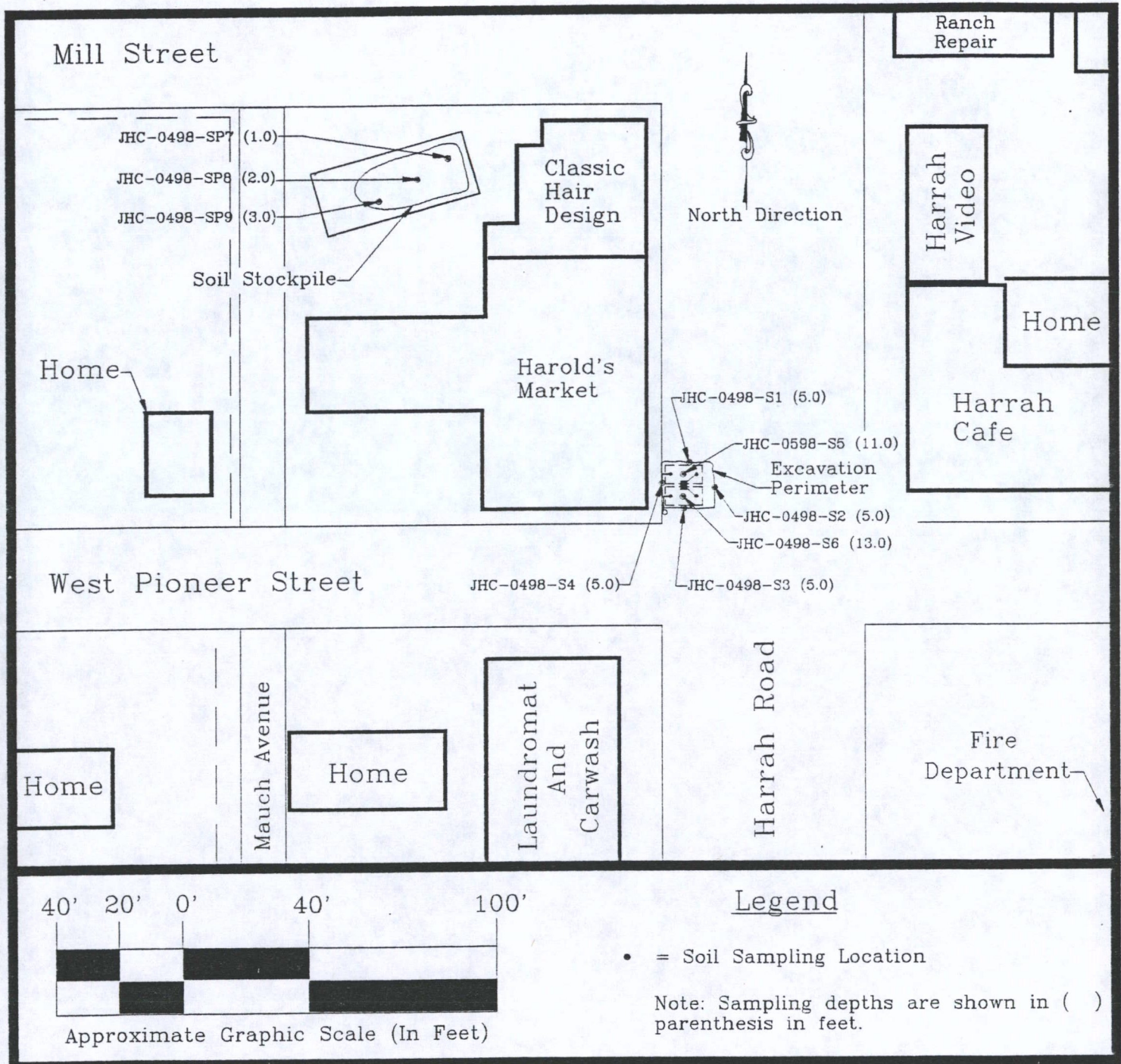


Figure 4. Closure Site Assessment Sampling Locations

Comparison of the analytical results (Appendix E) with the WSDOE *End use Criteria for Petroleum Contaminated Soils* (Appendix G) indicates that this soil stockpile is designated as "Class 2 Soil".

For Class 2 Soils, the WSDOE recommends that the soil may be used for:

- ♦ backfill at the cleanup site,
- ♦ fill in commercial or industrial areas,
- ♦ cover or fill in permitted landfills,
- ♦ road subgrade or other road construction fill.

However, fill in or near wetlands, surface water, groundwater, drinking water wells, utility trenches as residential topsoil is NOT recommended.

Upon completion of the project, Sage completed a copy of the WSDOE *UST Site Check/Site Assessment Checklist* and it is attached as Appendix H.

5.0 Limitations

In performance of this project, Sage Earth Sciences has conducted its activities in accordance with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. The conclusions and recommendations are based upon our field observations and independent laboratory analyses. Since the scope of work for this project is confined to the closure site assessment project, this document does not imply that the property is free of other environmental constraints. This report is solely for the use and information of our client. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and other parameters indicated. Sage Earth Sciences, Inc. is not responsible for the impacts of changes in environmental standards, practices, or regulations subsequent to the performance of services. Sage Earth Sciences, Inc. does not warrant the accuracy of information supplied by others, nor use of segregated portions of this report. Sage Earth Sciences, Inc. assumes no liability for conditions we were not authorized to evaluate, or conditions not generally recognized as predictable when services were performed.

Appendix A

SOIL EXCAVATION PROFILE



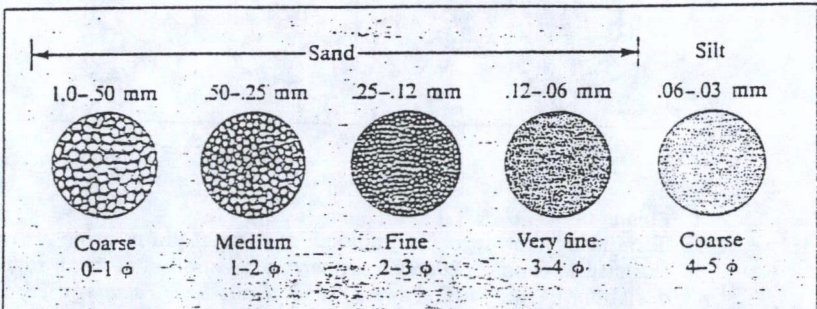
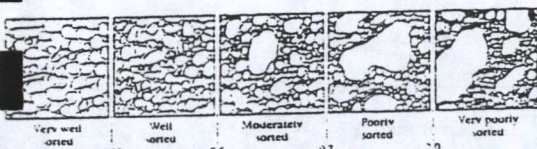
Field Crew Rodney Hunt

Project Name Harold's Lucky Dollar Market Project # _____

Address 4080 Harrah Road Harrah, WA 98933 Date 11/11/98

Location NE 1/4 NE 1/4 Sec. 34 T. 11 N. R. 18 E., W.M. Elevation -825 Datum MSL USGS

Pit Dimensions NA UST BASIN Finish Depth 13' BGS Pit Orientation East-West



Additional Detrital Rock Classifications on Reverse

Description of Lithologies

Matrix Soil	Groundwater	Depth (13')	USTs Excavation BASIN Graphic Log	Unified Soil Classification
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		

Asphalted Pavement

Matrix Supported Sandy Silt with River gravels to cobbles and sparse small boulders up to 8" inches in diameter

Excavation Terminated at approximately 13' feet below ground surface

Rodney Hunt 11/11/98
SAGE Representative Date

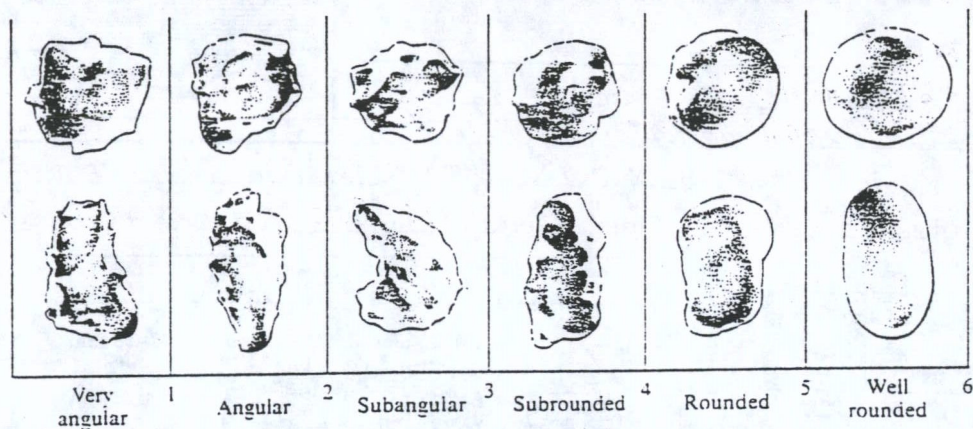


Figure 13-4
Terminology for degree of rounding of detrital grains using a hand lens. The numbers assigned to each roundness class permit calculation of mean roundness and standard deviation. [After M. C. Powers, 1953, *Jour. Sed. Petrology*, 23, Fig. 1.]

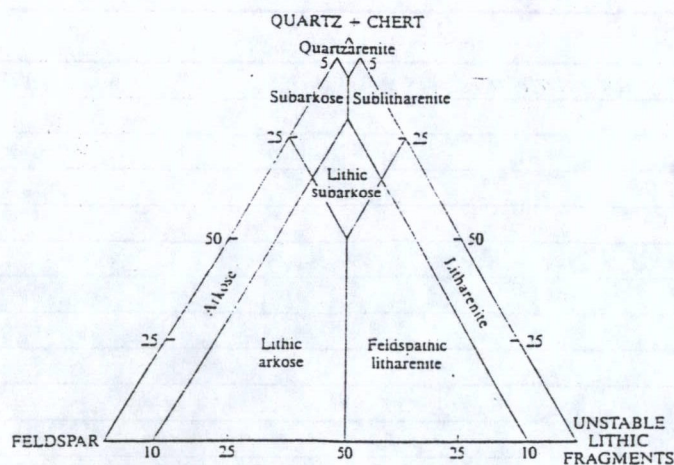


Figure 13-37
One of the many mineralogical classifications of sandstones in common use. [From E. F. McBride, 1963, *Jour. Sed. Petrology*, 33, Fig. 1.]

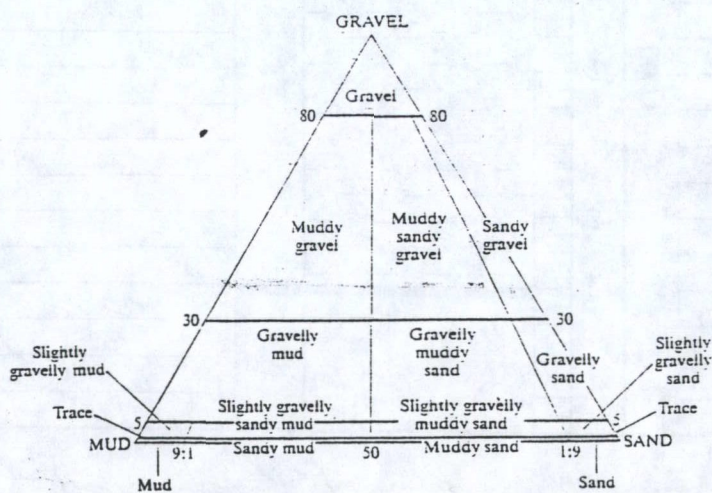
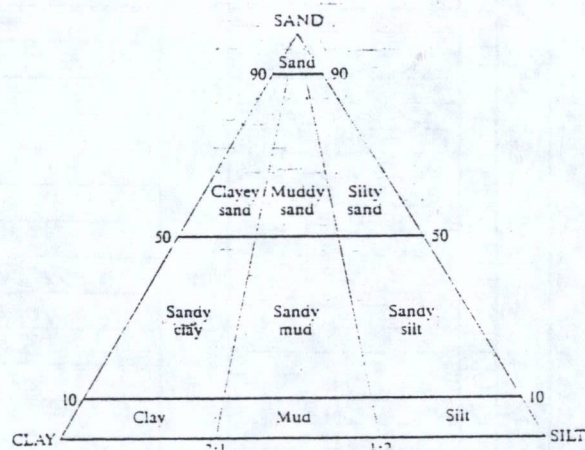


Figure 13-3
Triangular classification of grain sizes in detrital rocks. If no gravel is present, triangle A is used; if gravel is present, triangle B. Note the emphasis given to even a trace amount of gravel. [From R. L. Folk, 1954, *Jour. Geology*, 62, Fig. 1.]

The Udden-Wentworth Grain Size Scale for Clastic Sediments*

	Name	Millimeters	Micrometers	ϕ
GRAVEL	Boulder	4,096		-12
	Cobble	256		-8
	Pebble	64		-6
	Granule	4		-2
SAND	Very coarse sand	2		-1
	Coarse sand	1		0
	Medium sand	0.5	500	1
	Fine sand	0.25	250	2
	Very fine sand	0.125	125	3
	Coarse silt	0.062	62	4
MUD	Medium silt	0.031	31	5
	Fine silt	0.016	16	6
	Very fine silt	0.008	8	7
	Clay	0.004	4	8

*As devised by J. A. Udden (1898) and C. K. Wentworth (1924). The ϕ scale (Krumbein, 1934) was devised to facilitate statistical manipulation of grain-size data and is commonly used. $\phi = -\log_2 \text{mm}$.

Appendix B

Soil Sampling Methodology

Soil sampling locations were chosen at locations considered representative of soil conditions. To collect representative soil samples, Sage Earth Sciences uses the methodology outlined below.

1. Select a new sample jar whose volume is adequate for the appropriate analysis.
2. Remove a minimum of six (6) inches of soil to minimize the loss of volatile compounds.
3. Immediately transfer soil to the sample container, using the container itself to collect the sample. Using new nitrile gloves, pack the soil tightly into the container to prevent the loss of volatile compounds. Ensure that the container is filled completely to exclude any airspace in the sample.
4. Label the jar with a unique identification number, the analytical procedure to be used, the time and date of sample collection and the person who collected the sample.
5. Enter the sample on the Chain-of-Custody form and the Daily Field Sampling Log.
6. Place the sample in wet ice to cool the samples to approximately four (4) degrees Celsius.
7. Place the samples in a shipping cooler packed with absorbent material and blue ice for shipment.
8. Secure the Chain-of-Custody form to the underside of the cooler lid in a sealable plastic bag with tape.
9. Upon completion of sampling activities, secure the lid of the cooler with strapping tape and affix custody seals across the lid/cooler interface. Place appropriate shipping waybills atop the cooler.
10. Ship the samples to the laboratory via commercial courier.

Field Screening with the Flame Ionization Detector

For semi-quantitative analysis of organic vapors, such as those found in gasoline, Sage uses a Heath Porta-FID Organic Vapor Detector. The headspace method is used to detect organic vapors emitted by soils contaminated by volatile petroleum products. The field screening methodology, using the headspace method, is described as follows:

1. Place a discrete soil sample into a clean one quart mason jar, filling the jar approximately 1/3 full.
2. Immediately place aluminum foil over the top of the jar and secure it with a ring to prevent loss of volatile compounds.
3. Place the sample in boiling water for ten (10) minutes. This causes the volatile compounds to be released from soil particles and collect in the space above the soil.
4. Remove the sample from the boiling water and insert the instrument probe through the aluminum foil.
5. Record the instrument response on the Daily Field Sampling Log.

Appendix C

Sheet 11 of 1

(SP) = soil sample collected from stockpile

Appendix D

Analytical Methods

For confirmatory laboratory analysis, Sage submitted representative soil samples
to:

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282

The analytical methods requested for selected soil samples consist of:

- ♦ NWTPH-HCID (Hydrocarbon Identification),
- ♦ NWTPH-Dx (Diesel range petroleum hydrocarbons extended to include motor oil range hydrocarbons) and
- ♦ Method 6010 (Total Lead).

Appendix E

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Jensen, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

December 3, 1998

Rodney Heit, Project Manager
Sage Earth Sciences
PO Box 1644
Zillah, WA 98953

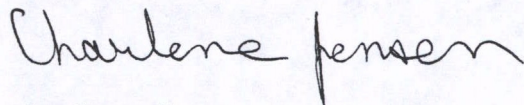
Dear Mr. Heit:

Included are the results from the testing of material submitted on November 13, 1998 from your JHC-0498 project. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Charlene Jensen
Chemist

Enclosures
SES1203R.DOC

FRIEDMAN & BRUYA, INC.**ENVIRONMENTAL CHEMISTS**

Date of Report: 12/03/98
Date Received: 11/13/98
Project: JHC-0498
Date Extracted: 11/19/98
Date Analyzed: 11/20/98

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID
Results Reported as Not Detected (ND) or Detected (D)**

THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY
THE WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO
PROVIDE INFORMATION WITH REGARDS TO THE ACTUAL IDENTIFICATION
OF ANY MATERIAL PRESENT

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> (% Recovery)
JHC-0498-S1 811062-01	ND	ND	ND	99
JHC-0498-S2 811062-02	ND	ND	ND	99
JHC-0498-S3 811062-03	ND	ND	ND	97
JHC-0498-S4 811062-04	ND	ND	ND	108
JHC-0498-S5 811062-05	ND	ND	ND	98
JHC-0498-S6 811062-06	ND	ND	ND	96
JHC-0498-SP7 811062-07	ND	D	ND	101
JHC-0498-SP8 811062-08	ND	ND	ND	110
JHC-0498-SP9 811062-09	ND	ND	ND	110
Method Blank	ND	ND	ND	100

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 100 mg/kg heavy oil.